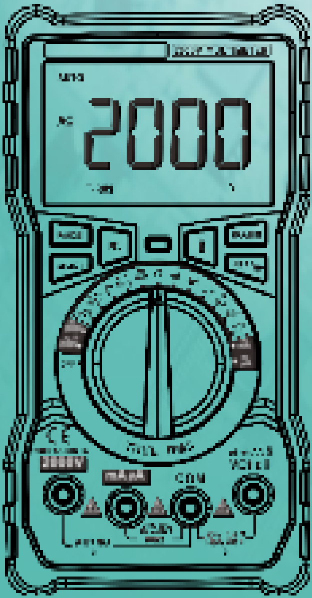
User Manual



LIMITED WARRANTY AND LIMITATION OF LIABILITY

Customers enjoy one-year warranty from the date of purchase.

This warranty does not cover fuses, disposable batteries, damage from misuse accident, neglect, alteration, contamination, or abnormal conditions of operation or handling, including failures caused by use outside of the product's specifications, or normal wear and tear of mechanical components.

Table of Contents Page

Introduction

This product is a battery-powered, true-rms, auto-ranging digital multimeter with a 6000 counts LCD display and a backlight.

Safety Information

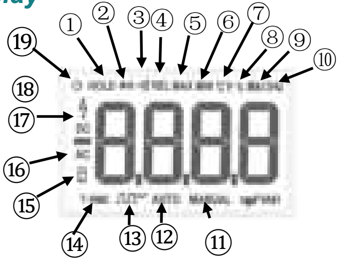
To avoid possible electrical shock, fire, or personal injury, please read all safety information before you use the product. Please use the product only as specified, or the protection supplied by the product can be compromised.

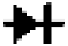
- Examine the case before you use the product. Look for cracks or missing plastic. Carefully look at the insulation around the terminals.
- The measurement must be made with correct input terminals and functions and within the allowable measuring range.

- Do not use the product around explosive gas, vapor, or in damp or wet environments.
- Keep fingers behind the finger guards on the probes.
- When the product has already been connected to the line being measured, do NOT touch the input terminal that is not in service.
- Disconnect the test leads from the circuit before changing the mode.
- When the voltage to be measured exceeds 36V DC or 25V AC, the operator shall be careful enough to avoid electric shock.
- Misuse of mode or range can lead to hazards, be cautious. “ OL ” will be shown on the display when the input is out of range.
- Low level of a battery will result in incorrect readings. Change the batteries when battery level is low. Do not make measurements when the battery door is not properly placed.

Instrument Overview

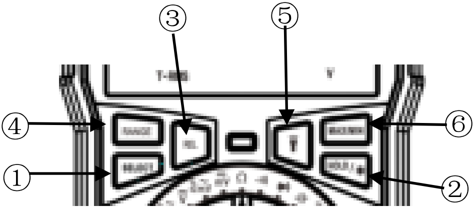
LCD Display



①	HOLD	Display freezes present reading.
②		Diode test.
③		Continuity test.
④	REL	The product measures both sinusoidal and non sinusoidal ac waveforms accurately.
⑤	MAX	Display shows maximum reading.
⑥	MIN	Display shows minimum reading.
⑦	°F°C	Temperature test. (Fahrenheit or Celsius)
⑧	%	Duty cycle test.

⑨	Ω	Resistance test. (Ohm)
⑩	Hz	Frequency test. (Hertz)
⑪	MANUAL	Manual range. The user selects the range.
⑫	AUTO	Auto range. The product selects the range with the best resolution.
⑬		Square waves output
⑭	TRUE RMS	True RMS
⑮		Low battery. Replace batteries.
⑯	AC	Alternating current.
⑰	DC	Direct current.
⑱		Unsafe Voltage.
⑲		Auto power off.
n k M μ m		Measurement units.

Function Buttons



①	Selects alternate measurement modes on a rotary switch setting, including: 1. Frequency/Duty Cycle 2. DC mA/AC mA 3. DC μA/AC μA 4. Celsius/Fahrenheit 5. Square waves output
②	Push once to hold the current reading on the display; push again to continue normal operation. Push for more than 2 seconds to turn on the backlight; long-push again to turn off or the backlight automatically turns off after 2 minutes.

③	Push this button to enter the relative mode. The product will store the present reading as a reference for subsequent readings. The display is zeroed, and the stored reading is subtracted from all subsequent readings. Push again to exit the relative mode.
④	Keep pushing this button to enter the NCV testing mode. In this mode, you have to push the button always.
⑤	Push once to turn on the flashlights,push once more to turn off the flashlight.
⑥	Push to toggle between the MAX and the MIN mode. To exit MAX/MIN mode, push the button for more than 2 seconds

Rotary Switch

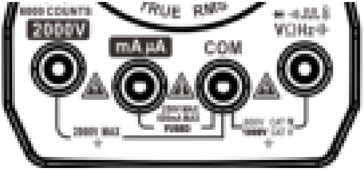


OFF	Turn off the product at this position. • The product automatically powers off after 15 minutes of inactivity. • The built-in beeper beeps 5 times 1 minute before auto power off. • To restart the product from auto power off, press the SELECT button or turn the rotary switch back to the OFF position and then to a needed position. • To disable the Auto Power Off function, hold down the SELECT button when turning on the product, you will hear four beeps if you have successfully disabled the function.

	AC High Voltage： ≤2000V AC
	DC High Voltage： ≤2000V DC
	NCV: Non-contact voltage
	AC Voltage： ≤750V AC
	DC Voltage： ≤1000V DC
	AC Millivolt： ≤600mV AC
	DC Millivolt： ≤600mV DC
	Resistance： ≤60MΩ
	Continuity
	Diode
	Capacitance： ≤60mF
	Frequency： ≤10MHz
	Square wave out： 50Hz~5000Hz
	Temperature： Celsius:-20~1000, Fahrenheit:-4~1832

	AC/DC Current Milliampere：≤600mA
	AC/DC Current Microampere：≤6000uA

Input Terminals



	2000V AC/DC high voltage measurement dedicated input port.
	AC and DC small current measurement input port Milliampere <600mA microampere <6000uA
COM	Common (return) terminal for all measurements.
	Input terminal for the measurements of: 1. AC/DC voltage 2. Resistance 3. Capacitance 4. Frequency 5. Temperature 6. Continuity 7. Diode 8. Duty cycle 9. Square waves output

Measurements Instruction

Measure AC/DC Voltage

1. Connect the black test lead to the COM Terminal and the red lead to the  Terminal.
2. According to the voltage signal that needs to be measured, rotate the rotating knob to select AC or DC voltage gear; Press the RANGE key to select AUTO or MANUAL mode. Touch the probes to the correct test points of the circuit to measure the voltage.
3. Read the measured voltage on the display.

***Do not measure voltage that exceeds the extremes as indicated in the Specifications.**
***Do not touch high voltage circuit during measurements.**

Measure AC/DC Current

1. Connect the black test lead to the COM Terminal and the red lead to the mA μA Terminal (The maximum test value is 600mA).

2. The knob switch points the arrow on the knob to the AC/DC mA or uA range according to the signal indication.
3. Break the circuit path to be measured, connect the test leads across the break and apply power.
4. Read the measured current on the display.

***Do not measure current that exceeds the extremes as indicated in the Specifications.**
***This meter has a small current range, and the maximum current should not exceed 600mA. Evaluate before measuring, and then select the appropriate gear.**
***Do not input voltage at this setting.**

Measure Resistance

1. Connect the black test lead to the COM Terminal and the test lead to the  Terminal.
2. Turn the rotary switch to Ω mode according to the signal instructions.
3. Touch the probes to the desired test points of the circuit to measure the resistance.
4. Read the measured resistance on the display.

*Disconnect circuit power and discharge all capacitors before you test resistance.**
***Do not input voltage at this setting.**

Test for Continuity

1. Connect the black test lead to the COM Terminal and the red lead to the  Terminal.
2. Turn the rotary switch to continuity mode.
3. Touch the probes to the desired test points of the circuit.
4. The built-in beeper will beep when the resistance is lower than 50Ω, which indicates a short circuit.

***Do not input voltage at this setting.**

Test Diodes

1. Connect the black test lead to the COM Terminal and the red lead to the  Terminal.

2. Turn the rotary switch diode.
3. Connect the red probe to the anode side and the black probe to the cathode side of the diode being tested.
4. Read the forward bias voltage value on the display.
5. If the polarity of the test leads is reversed with diode polarity or the diode is broken, the display reading shows “OL”.

***Do not input voltage at this setting.**
***Disconnect circuit power and discharge all capacitors before you test diode.**

Measure Capacitance

1. Connect the black test lead to the COM Terminal and the red lead to the [illegible] Terminal.
2. Turn the rotary switch to ⊣⊢ .
3. Connect the red probe to the anode side and

the black probe to the cathode side of the capacitor being tested.

4. Read the measured capacitance value on the display once the reading is stablized.

***Disconnect circuit power and discharge all capacitors before you test capacitance.**

Measure Frequency

1. Connect the black test lead to the COM Terminal and the red lead to the Terminal.
2. Turn the rotary switch to (applies to high frequency with low voltage); or turn the rotary switch to AC Voltage mode, press SELECT once to toggle to the Frequency Mode (applies to low frequency with high voltage).
3. Touch the probes to the desired test points.
4. Read the measured frequency value on the display.

Measure Duty Cycle

1. Connect the black test lead to the COM Terminal and the red lead to the Terminal.
2. Turn the rotary switch to , press the SELECT button once to toggle to the Duty Cycle Mode .
3. Touch the probes to the desired test points.
4. Read the measured duty cycle value on the display.

Measure Temperature

1. Connect the black thermocouple probe to the COM Terminal and the red probe to the Terminal.
2. Turn the rotary switch to , and the display will show the room temperature, to toggle between ℃/℉, press SELECT button.
3. Touch the probes to the desired test points.
4. Read the measured temperature on the display.

***Do not input voltage at this setting.**

Square Wave Output

1. Connect the black test lead to the COM Terminal and the red lead to the Terminal.
2. Turn the rotary switch to , and the default output frequency is 50Hz. To change the output frequency, press the SEL button.
3. Touch the probes to the desired test points.

***Do not input voltage at this setting.**

2000V AC/DC high voltage measurement

1. According to the signal properties to be measured, choose to turn the dial wheel to the high voltage 2000V AC or DC voltage in the red zone, insert the black marker into the COM end, and insert the red plug into the 2000V end.
2. Touch the probes to the desired test points.
3. Read the measured duty cycle value on the display.

Test NCV

1. Keep pushing the NCV button .
2. Hold the product and move it around, the built-in beeper will beep when the inner sensor detects AC voltage nearby. The stronger the voltage is, the quicker the beeper beeps.
3. At this position, if the red test lead is inserted into the  , and the probe respectively contact the neutral wire (N) and live wire (L), can distinguish them; Strong induction for the live wire, weak induction for the neutral wire .

Maintenance

Beyond replacing batteries and fuses, do not attempt to repair or service the product unless you are qualified to do so and have the relevant calibration, performance test, and service instructions.

Clean the Product

Wipe the product with a damp cloth and mild detergent. Do not use abrasives or solvents. Dirt or moisture in the terminals can affect readings.

*Remove the input signals before you clean the product.

Replace the Batteries

When “” is shown on the display, batteries shall be replaced as below:

1. Remove the test leads and turn off the product before replacing the batteries.

2. Loosen the screw on the battery door and remove the battery door.
3. Replace the used batteries with new batteries of the same type.
4. Place the battery door back and fasten the screw.

Replace the Fuses

When a fuse is blown or do not work properly, it shall be replaced as below:

1. Remove the test leads and turn off the product before replacing the fuse.
2. Loosen the four screws on the back cover and the screw on the battery door, then remove the battery door and the back cover.
3. Replace the fuse with a new fuse of the same type.
4. Place the back cover and the battery door back and fasten the screws.

Specifications

General Specifications		
Display (LCD)	6000 counts	
Ranging	Auto/Manual	
Material	ABS/PVC	
Update Rate	3 times/second	
Ture RMS	√	
Data Hold	√	
Backlight	√	
Low Battery Indication	√	
Auto Power Off	√	
Mechanical Specifications		
Dimension	176*91*47mm	
Weight	330g(no battery)	
Battery Type	1.5V AA Battery * 3	
Warranty	One year	
Environmental Specifications		
Operating	Temperature	0~40℃
	Humidity	＜75%
Storage	Temperature	-20~60℃
	Humidity	＜80%

Electrical Specifications

<table>
<tr><th>Function</th><th>Range</th><th>Resolution</th><th>Accuracy</th></tr>
<tr><td rowspan="6">DC Voltage
(V)
(mV)</td><td>60.00mV</td><td>0.01mV</td><td></td></tr>
<tr><td>600.0mV</td><td>0.1mV</td><td rowspan="5">±(0.5%+3)</td></tr>
<tr><td>6.000V</td><td>0.001V</td></tr>
<tr><td>60.00V</td><td>0.01V</td></tr>
<tr><td>600.0V</td><td>0.1V</td></tr>
<tr><td>1000V</td><td>1V</td></tr>
<tr><td>DC High Voltage</td><td>2000V</td><td>1V</td><td>±(2.0%+3)</td></tr>
<tr><td rowspan="6">AC Voltage
(V)
(mV)</td><td>60.00mV</td><td>0.01mV</td><td></td></tr>
<tr><td>600.0mV</td><td>0.1mV</td><td rowspan="4">±(1.0%+3)</td></tr>
<tr><td>6.000V</td><td>0.001V</td></tr>
<tr><td>60.00V</td><td>0.01V</td></tr>
<tr><td>600.0V</td><td>0.1V</td></tr>
<tr><td>750V</td><td>1V</td><td>±(1.2%+3)</td></tr>
<tr><td>DC High Voltage</td><td>2000V</td><td>1V</td><td>±(3.0%+3)</td></tr>
</table>

Function	*Range*	*Resolution*	*Accuracy*
DC Current (mA)	60.00mA	0.01mA	±(1.2%+3)
	600.0mA	0.1mA	
DC Current (μA)	600.0uA	0.1uA	
	6000uA	1uA	
AC Current (mA)	60.00mA	0.01mA	±(1.5%+3)
	600.0mA	0.1mA	
AC Current (μA)	600.0uA	0.1uA	
	6000uA	1uA	
Resistance	600.0Ω	0.1Ω	±(0.5%+3)
	6.000kΩ	0.001kΩ	
	60.00kΩ	0.01kΩ	
	600.0kΩ	0.1kΩ	
	6.000MΩ	0.001MΩ	
	60.00MΩ	0.01MΩ	±(1.5%+3)

Function	*Range*	*Resolution*	*Accuracy*
Capacitance	6.000nF	0.001nF	±(5.0%+20)
	60.00nF	0.01nF	±(2.0%+5)
	600.0nF	0.1nF	
	6.000µF	0.001µF	
	60.00µF	0.01µF	
	600.0µF	0.1µF	
	6.000mF	0.001mF	±(5.0%+5)
	60.00mF	0.01mF	
Frequency	9.999Hz	0.001Hz	±(0.1%+5)
	99.99Hz	0.01Hz	
	999.9Hz	0.1Hz	
	9.999kHz	0.001kHz	
	99.99kHz	0.01kHz	
	999.9kHz	0.1kHz	
	10.00MHz	0.01MHz	
Duty Cycle	1%~99%	0.1%	±(0.1%+2)

Function	*Range*	*Resolution*	*Accuracy*
Temperature	(-20~1000)℃	1℃	±(3%+5）
	(-4~1832)℉	1℉	
Diode	√		
Continuity	√		
NCV	√		
Square wave output	50Hz~5000Hz		